



## SEQUENCE LISTING

RECEIVED

JAN 20 2004

TECH CENTER 1600/2800

&lt;105&gt; Croce, Carlo

&lt;120&gt; Nitrilase Homologs

&lt;130&gt; TJU-2510

&lt;140&gt; 09/357,675

&lt;141&gt; 1999-07-20

&lt;150&gt; 60/093,350

&lt;151&gt; 1998-07-20

&lt;160&gt; 31

&lt;170&gt; PatentIn version 3.2

&lt;210&gt; 1

&lt;211&gt; 1416

&lt;212&gt; DNA

&lt;213&gt; cDNA Sequence

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; (19)..(19)

&lt;223&gt; n=a

&lt;400&gt; 1

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tatttcatgg aaactgaagt tctgctgagg gctgagcagc actggcattg aaaaatataa 1380  
taatcataaa gtcaaaaaaa aaaaaaaaaa aaaaaa 1416

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<210> 3  
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<400> 3  
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<223> n is a, c, g, or t

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cggtggcgga agttgtctgg t 21

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<212> DNA
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gtggcggtg ctcaaactgg 20

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tcgcgacgat gaacaagtcg g 21

<210> 10
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<210> 19  
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<220>  
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<222> (82)..(82)  
<223> Xaa is an unknown amino acid

<400> 19

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Leu Lys Thr Glu Leu Ser Phe Ala Leu Val Asn Arg Lys Pro Val Val  
20 25 30

Pro Gly His Val Leu Val Cys Pro Leu Arg Pro Val Glu Arg Phe His  
35 40 45

Asp Leu Arg Pro Asp Glu Val Ala Asp Leu Phe Gln Thr Thr Gln Arg  
50 55 60

Val Gly Thr Val Val Glu Lys His Phe His Gly Thr Ser Leu Thr Phe  
65 70 75 80

Ser Xaa Gln Asp Gly Pro Glu Ala Gly Gln Thr Val Lys His Val His  
85 90 95

Val His Val Leu Pro Arg Lys Ala Gly Asp Phe His Arg Asn Asp Ser  
100 105 110

Ile Tyr Glu Glu Leu Gln Lys His Asp Lys Glu Asp Phe Pro Ala Ser  
115 120 125

Trp Arg Ser Glu Glu Glu Glu Ala Ala Glu Ala Ala Leu Arg Val  
130 135 140

Tyr Phe Gln  
145

<210> 20  
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<212> PRT  
<213> murine

<400> 20

Met Ser Phe Arg Phe Gly Gln His Leu Ile Lys Pro Ser Val Val Phe  
1 5 10 15

Leu Lys Thr Glu Leu Ser Phe Ala Leu Val Asn Arg Lys Pro Val Val  
20 25 30

Pro Gly His Val Leu Val Cys Pro Leu Arg Pro Val Glu Arg Phe Arg  
35 40 45

Asp Leu His Pro Asp Glu Val Ala Asp Leu Phe Gln Val Thr Gln Arg  
50 55 60

Val Gly Thr Val Val Glu Lys His Phe Gln Gly Thr Ser Ile Thr Phe  
65 70 75 80

Ser Met Gln Asp Gly Pro Glu Ala Gly Gln Thr Val Lys His Val His  
85 90 95

Val His Val Leu Pro Arg Lys Ala Gly Asp Phe Pro Arg Asn Asp Asn  
100 105 110

Ile Tyr Asp Glu Leu Gln Lys His Asp Arg Glu Glu Glu Asp Ser Pro  
115 120 125

Ala Phe Trp Arg Ser Glu Lys Glu Met Ala Ala Glu Ala Glu Ala Leu  
130 135 140

Arg Val Tyr Phe Gln Ala  
145 150

<210> 21  
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<213> Homo sapiens

<400> 21

Met Leu Gly Phe Ile Thr Arg Pro Pro His Arg Phe Leu Ser Leu Leu  
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Cys Pro Gly Leu Arg Ile Pro Gln Leu Ser Val Leu Cys Ala Gln Pro  
20 25 30

Arg Pro Arg Ala Met Ala Ile Ser Ser Ser Ser Cys Glu Leu Pro Leu  
35 40 45

Val Ala Val Cys Gln Val Thr Ser Thr Pro Asp Lys Gln Gln Asn Phe  
50 55 60

Lys Thr Cys Ala Glu Leu Val Arg Glu Ala Ala Arg Leu Gly Ala Cys  
65 70 75 80

Leu Ala Phe Leu Pro Glu Ala Phe Asp Phe Ile Ala Arg Asp Pro Ala  
85 90 95

Glu Thr Leu His Leu Ser Glu Pro Leu Gly Gly Lys Leu Leu Glu Glu  
100 105 110

Tyr Thr Gln Leu Ala Arg Glu Cys Gly Leu Trp Leu Ser Leu Gly Gly  
115 120 125

Phe His Glu Arg Gly Gln Asp Trp Glu Gln Thr Gln Lys Ile Tyr Asn  
130 135 140

Cys His Val Leu Leu Asn Ser Lys Gly Ala Val Val Ala Thr Tyr Arg  
145 150 155 160

Lys Thr His Leu Cys Asp Val Glu Ile Pro Gly Gln Gly Pro Met Cys  
165 170 175

Glu Ser Asn Ser Thr Met Pro Gly Pro Ser Leu Glu Ser Pro Val Ser  
180 185 190

Thr Pro Ala Gly Lys Ile Gly Leu Ala Val Cys Tyr Asp Met Arg Phe  
195 200 205

Pro Glu Leu Ser Leu Ala Leu Ala Gln Ala Gly Ala Glu Ile Leu Thr  
210 215 220

Tyr Pro Ser Ala Phe Gly Ser Ile Thr Gly Pro Ala His Trp Glu Val  
225 230 235 240

Leu Leu Arg Ala Arg Ala Ile Glu Thr Gln Cys Tyr Val Val Ala Ala  
245 250 255

Ala Gln Cys Gly Arg His His Glu Lys Arg Ala Ser Tyr Gly His Ser  
260 265 270

Met Val Val Asp Pro Trp Gly Thr Val Val Ala Arg Cys Ser Glu Gly  
275 280 285

Pro Gly Leu Cys Leu Ala Arg Ile Asp Leu Asn Tyr Leu Arg Gln Leu  
290 295 300

Arg Arg His Leu Pro Val Phe Gln His Arg Arg Pro Asp Leu Tyr Gly  
305 310 315 320

Asn Leu Gly His Pro Leu Ser  
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<210> 22  
<211> 323  
<212> PRT  
<213> murine

<400> 22

Met Leu Gly Phe Ile Thr Arg Pro Pro His Gln Leu Leu Cys Thr Gly  
1 5 10 15

Tyr Arg Leu Leu Arg Ile Pro Val Leu Cys Thr Gln Pro Arg Pro Arg  
20 25 30

Thr Met Ser Ser Ser Thr Ser Trp Glu Leu Pro Leu Val Ala Val Cys  
35 40 45

Gln Val Thr Ser Thr Pro Asn Lys Gln Glu Asn Phe Lys Thr Cys Ala  
 50 55 60

Glu Leu Val Gln Glu Ala Ala Arg Leu Gly Ala Cys Leu Ala Phe Leu  
 65 70 75 80

Pro Glu Ala Phe Asp Phe Ile Ala Arg Asn Pro Ala Glu Thr Leu Leu  
 85 90 95

Leu Ser Glu Pro Leu Asn Gly Asp Leu Leu Gly Gln Tyr Ser Gln Leu  
 100 105 110

Ala Arg Glu Cys Gly Ile Trp Leu Ser Leu Gly Gly Phe His Glu Arg  
 115 120 125

Gly Gln Asp Trp Glu Gln Asn Gln Lys Ile Tyr Asn Cys His Val Leu  
 130 135 140

Leu Asn Ser Lys Gly Ser Val Val Ala Ser Tyr Arg Lys Thr His Leu  
 145 150 155 160

Cys Asp Val Glu Ile Pro Gly Gln Gly Pro Met Arg Glu Ser Asn Tyr  
 165 170 175

Thr Lys Pro Gly Gly Thr Leu Glu Pro Pro Val Lys Thr Pro Ala Gly  
 180 185 190

Lys Val Gly Leu Ala Ile Cys Tyr Asp Met Arg Phe Pro Glu Leu Ser  
 195 200 205

Leu Lys Leu Ala Gln Ala Gly Ala Glu Ile Leu Thr Tyr Pro Ser Ala  
 210 215 220

Phe Gly Ser Val Thr Gly Pro Ala His Trp Glu Val Leu Leu Arg Ala  
 225 230 235 240

Arg Ala Ile Glu Ser Gln Cys Tyr Val Ile Ala Ala Ala Gln Cys Gly  
 245 250 255

Arg His His Glu Thr Arg Ala Ser Tyr Gly His Ser Met Val Val Asp  
 260 265 270

Pro Trp Gly Thr Val Val Ala Arg Cys Ser Glu Gly Pro Gly Leu Cys  
 275 280 285

Leu Ala Arg Ile Asp Leu His Phe Leu Gln Gln Met Arg Gln His Leu  
 290 295 300

Pro Val Phe Gln His Arg Arg Pro Asp Leu Tyr Gly Ser Leu Gly His  
 305 310 315 320

Pro Leu Ser



<210> 23  
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 <213> Drosophila melanogaster

<400> 23

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Met Ser Thr Leu Val Asn Thr Thr Arg Arg Ser Ile Val Ile Ala Ile
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His Gln Gln Leu Arg Arg Met Ser Val Gln Lys Arg Lys Asp Gln Ser
          20          25          30

Ala Thr Ile Ala Val Gly Gln Met Arg Ser Thr Ser Asp Lys Ala Ala
          35          40          45

Asn Leu Ser Gln Val Ile Glu Leu Val Asp Arg Ala Lys Ser Gln Asn
          50          55          60

Ala Cys Met Leu Phe Leu Pro Glu Cys Cys Asp Phe Val Gly Glu Ser
          65          70          75          80

Arg Thr Gln Thr Ile Glu Leu Ser Glu Gly Leu Asp Gly Glu Leu Met
          85          90          95

Ala Gln Tyr Arg Glu Leu Ala Lys Cys Asn Lys Ile Trp Ile Ser Leu
          100          105          110

Gly Gly Val His Glu Arg Asn Asp Gln Lys Ile Phe Asn Ala His Val
          115          120          125

Leu Leu Asn Glu Lys Gly Glu Leu Ala Ala Val Tyr Arg Lys Leu His
          130          135          140

Met Phe Asp Val Thr Thr Lys Glu Val Arg Leu Arg Glu Ser Asp Thr
          145          150          155          160

Val Thr Pro Gly Tyr Cys Leu Glu Arg Pro Val Ser Thr Pro Val Gly
          165          170          175

Gln Ile Gly Leu Gln Ile Cys Tyr Asp Leu Arg Phe Ala Glu Pro Ala
          180          185          190

Val Leu Leu Arg Lys Leu Gly Ala Asn Leu Leu Thr Tyr Pro Ser Ala
          195          200          205

Phe Thr Tyr Ala Thr Gly Lys Ala His Trp Glu Ile Leu Leu Arg Ala
          210          215          220

Arg Ala Ile Glu Thr Gln Cys Phe Val Val Ala Ala Ala Gln Ile Gly
          225          230          235          240

Trp His Asn Gln Lys Arg Gln Ser Trp Gly His Ser Met Ile Val Ser

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245

250

255

Pro Trp Gly Asn Val Leu Ala Asp Cys Ser Glu Gln Glu Leu Asp Ile  
 260 265 270

Gly Thr Ala Glu Val Asp Leu Ser Val Leu Gln Ser Leu Tyr Gln Thr  
 275 280 285

Met Pro Cys Phe Glu His Arg Arg Asn Asp Ile Tyr Ala Leu Thr Ala  
 290 295 300

Tyr Asn Leu Arg Ser Lys Glu Pro Thr Gln Asp Arg Pro Phe Ala Thr  
 305 310 315 320

Asn Ile Val Asp Lys Arg Thr Ile Phe Tyr Glu Ser Glu His Cys Phe  
 325 330 335

Ala Phe Thr Asn Leu Arg Cys Val Val Lys Gly His Val Leu Val Ser  
 340 345 350

Thr Lys Arg Val Thr Pro Arg Leu Cys Gly Leu Asp Cys Ala Glu Met  
 355 360 365

Ala Asp Met Phe Thr Thr Val Cys Leu Val Gln Arg Leu Leu Glu Lys  
 370 375 380

Ile Tyr Gln Thr Thr Ser Ala Thr Val Thr Val Gln Asp Gly Ala Gln  
 385 390 395 400

Ala Gly Gln Thr Val Pro His Val His Phe His Ile Met Pro Arg Arg  
 405 410 415

Leu Gly Asp Phe Gly His Asn Asp Gln Ile Tyr Val Lys Leu Asp Glu  
 420 425 430

Arg Ala Glu Glu Lys Pro Pro Arg Thr Ile Glu Glu Arg Ile Glu Glu  
 435 440 445

Ala Gln Ile Tyr Arg Lys Phe Leu Thr Asp Ile Ser  
 450 455 460

<210> 24  
 <211> 440  
 <212> PRT  
 <213> C. elegans

<400> 24

Met Leu Ser Thr Val Phe Arg Arg Thr Met Ala Thr Gly Arg His Phe  
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Ile Ala Val Cys Gln Met Thr Ser Asp Asn Asp Leu Glu Lys Asn Phe  
 20 25 30

Gln Ala Ala Lys Asn Met Ile Glu Arg Ala Gly Glu Lys Lys Cys Glu

35					40					45					
Met	Val	Phe	Leu	Pro	Glu	Cys	Phe	Asp	Phe	Ile	Gly	Leu	Asn	Lys	Asn
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Glu	Gln	Ile	Asp	Leu	Ala	Met	Ala	Thr	Asp	Cys	Glu	Tyr	Met	Glu	Lys
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Tyr	Arg	Glu	Leu	Ala	Arg	Lys	His	Asn	Ile	Trp	Leu	Ser	Leu	Gly	Gly
			85						90					95	
Leu	His	His	Lys	Asp	Pro	Ser	Asp	Ala	Ala	His	Pro	Trp	Asn	Thr	His
			100					105					110		
Leu	Ile	Ile	Asp	Ser	Asp	Gly	Val	Thr	Arg	Ala	Glu	Tyr	Asn	Lys	Leu
	115						120					125			
His	Leu	Phe	Asp	Leu	Glu	Ile	Pro	Gly	Lys	Val	Arg	Leu	Met	Glu	Ser
	130					135					140				
Glu	Phe	Ser	Lys	Ala	Gly	Thr	Glu	Met	Ile	Pro	Pro	Val	Asp	Thr	Pro
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Ile	Gly	Arg	Leu	Gly	Leu	Ser	Ile	Cys	Tyr	Asp	Val	Arg	Phe	Pro	Glu
			165						170					175	
Leu	Ser	Leu	Trp	Asn	Arg	Lys	Arg	Gly	Ala	Gln	Leu	Leu	Ser	Phe	Pro
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Ser	Ala	Phe	Thr	Leu	Asn	Thr	Gly	Leu	Ala	His	Trp	Glu	Thr	Leu	Leu
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225					230					235					240
Val	Asp	Pro	Trp	Gly	Ala	Val	Val	Ala	Gln	Cys	Ser	Glu	Arg	Val	Asp
				245					250					255	
Met	Cys	Phe	Ala	Glu	Ile	Asp	Leu	Ser	Tyr	Val	Asp	Thr	Leu	Arg	Glu
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Met	Gln	Pro	Val	Phe	Ser	His	Arg	Arg	Ser	Asp	Leu	Tyr	Thr	Leu	His
		275					280					285			
Ile	Asn	Glu	Lys	Ser	Ser	Glu	Thr	Gly	Gly	Leu	Lys	Phe	Ala	Arg	Phe
	290					295					300				
Asn	Ile	Pro	Ala	Asp	His	Ile	Phe	Tyr	Ser	Thr	Pro	His	Ser	Phe	Val
305					310					315					320

Phe Val Asn Leu Lys Pro Val Thr Asp Gly His Val Leu Val Ser Pro  
325 330 335

Lys Arg Val Val Pro Arg Leu Thr Asp Leu Thr Asp Ala Glu Thr Ala  
340 345 350

Asp Leu Phe Ile Val Ala Lys Lys Val Gln Ala Met Leu Glu Lys His  
355 360 365

His Asn Val Thr Ser Thr Thr Ile Cys Val Gln Asp Gly Lys Asp Ala  
370 375 380

Gly Gln Thr Val Pro His Val His Ile His Ile Leu Pro Arg Arg Ala  
385 390 395 400

Gly Asp Phe Gly Asp Asn Glu Ile Tyr Gln Lys Leu Ala Ser His Asp  
405 410 415

Lys Glu Pro Glu Arg Lys Pro Arg Ser Asn Glu Gln Met Ala Glu Glu  
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Ala Val Val Tyr Arg Asn Leu Met  
435 440

<210> 25  
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<213> Polypeptide Sequence

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<223> Xaa is an unknown amino acid  
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20 25 30

Arg Arg Pro Arg Leu Gly Phe Ile Thr Arg Pro Pro His Arg Phe Leu  
35 40 45

Ser Leu Leu Cys Pro Gly Leu Arg Ile Pro Gln Leu Ser Val Leu Cys  
50 55 60

Ala Gln Pro Arg Pro Arg Ala Met Ala Ile Ser Ser Ser Ser Cys Glu  
65 70 75 80

Leu Pro Leu Val Ala Val Cys Gln Val Thr Ser Thr Pro Asp Lys Gln  
85 90 95

Gln Asn Phe Lys Thr Cys Ala Glu Leu Val Arg Glu Ala Ala Arg Leu  
100 105 110

Gly Ala Cys Leu Ala Phe Leu Pro Glu Ala Phe Asp Phe Ile Ala Arg  
115 120 125

Asp Pro Ala Glu Thr Leu His Leu Ser Glu Pro Leu Gly Gly Lys Leu  
130 135 140

Leu Glu Glu Tyr Thr Gln Leu Ala Arg Glu Cys Gly Leu Trp Leu Ser  
145 150 155 160

Leu Gly Gly Phe His Glu Arg Gly Gln Asp Trp Glu Gln Thr Gln Lys  
165 170 175

Ile Tyr Asn Cys His Val Leu Leu Asn Ser Lys Gly Ala Val Val Ala  
180 185 190

Thr Tyr Arg Lys Thr His Leu Cys Asp Val Glu Ile Pro Gly Gln Gly  
195 200 205

Pro Met Cys Glu Ser Asn Ser Thr Met Pro Gly Pro Ser Leu Glu Ser  
210 215 220

Pro Val Ser Thr Pro Ala Gly Lys Ile Gly Leu Ala Val Cys Tyr Asp  
225 230 235 240

Met Arg Phe Pro Glu Leu Ser Leu Ala Leu Ala Gln Ala Gly Ala Glu  
245 250 255

Ile Leu Thr Tyr Pro Ser Ala Phe Gly Ser Ile Thr Gly Pro Ala His  
260 265 270

Trp Glu Val Leu Leu Arg Ala Arg Ala Ile Glu Thr Gln Cys Tyr Val  
275 280 285

Val Ala Ala Ala Gln Cys Gly Arg His His Glu Lys Arg Ala Ser Tyr  
290 295 300

Gly His Ser Met Val Val Asp Pro Trp Gly Thr Val Val Ala Arg Cys  
305 310 315 320

Ser Glu Gly Pro Gly Leu Cys Leu Ala Arg Ile Asp Leu Asn Tyr Leu  
325 330 335

Arg Gln Leu Arg Arg His Leu Pro Val Phe Gln His Arg Arg Pro Asp  
340 345 350

Leu Tyr Gly Asn Leu Gly His Pro Leu Ser  
355 360

<210> 26  
<211> 23  
<212> PRT  
<213> Homo sapiens

<400> 26

Asp Leu Thr Ser Val Ser Leu Asp Leu Pro Leu Pro Pro Pro Pro Cys  
1 5 10 15

His Tyr Glu Leu Val Leu Met  
20

<210> 27

<211> 15

<212> PRT

<213> Homo sapiens

<400> 27

Leu Gly Gly Arg Ile Gln Ala Gln Leu Pro Ser Leu Gly Glu Pro  
1 5 10 15

<210> 28

<211> 13

<212> PRT

<213> Homo sapiens

<400> 28

Trp Asn Thr Asp Gly Leu Leu Gly Lys Glu Thr Phe Thr  
1 5 10

<210> 29

<211> 24

<212> PRT

<213> Homo sapiens

<400> 29

Ala Ser Pro Glu Val Arg Leu Gln Phe Gln Lys Gly Gly Ile Leu Tyr  
1 5 10 15

Ser His Cys Leu Phe His Gly Asn  
20

<210> 30

<211> 5

<212> PRT

<213> Homo sapiens

<400> 30

Ser Ser Ala Glu Gly  
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<210> 31

<211> 20

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<400> 31

Ala Ala Leu Ala Leu Lys Asn Ile Ile Ile Ile Lys Ser Lys Lys Lys  
1 5 10 15

Lys Lys Lys Lys  
20

